

Wisconsin Highway Research Program

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Research Implementation & Project Closure

Project Information	
<i>(To be completed by WHRP staff when draft report is received)</i> Date completed: June 23, 2006	
Project Title: Evaluation of the Extent of HMA Moisture Damage as it Relates to Pavement Performance	Project ID: 0092-01-03
Technical Oversight Committee: Flexible Pavement	TOC Chair: Len Makowski
Project Start Date: November 2000	WisDOT Project Manager: Judie Ryan
Project End Date: May 2003	Approved Contract Amount: \$50,753
Final Report Dated: May 2003	Actual Project Expenditures: \$50,753
Principal Investigator: Hussain Bahia Organization: University of Wisconsin-Madison	Co-investigators (including research assistants) and Organizations: Kunnawee Kantipong (RA)

Implementation / Further Research Recommendations		
<i>(Information provided by TOC and WisDOT project manager when final report is approved)</i> Date completed: July 11, 2006		
1. What WisDOT policy or practice does this research project pertain to? Please identify the specific section(s) of the Facilities Development Manual (FDM), Construction and Materials Manual (CMM), Standard Specifications, other manual, or accepted practice to which this research pertains. Standard Specs: 460.2.7, CMM 4-25-60, WisDOT 1559, HTCP HMA Tech III Mix Design		
2. Based on the results of this research, the following steps are recommended. (Please select either A, B or C, and provide detail in Items 3 to 7, below.) <input type="checkbox"/> A. No further activity is necessary. (Please skip to Item 7.) <input checked="" type="checkbox"/> B. Revisions to WisDOT policy or practice are not appropriate at this time. However, to gain further value from this research, we recommend follow-up research and/or validation activities as detailed in 3 through 6, below. <input type="checkbox"/> C. The Technical Oversight Committee recommends implementing changes to the following WisDOT policies or practices. (Please identify specific section(s) of specific manuals, where applicable):		
3. Describe the scope and objectives of follow-up research or implementation of specific changes to WisDOT procedures. Further Investigate test methods to better qualify moisture damage		
4. Details of Follow-up Research or Implementation Activities:		
Task	Person responsible	Target completion date
1. 0092-05-12: Test Method to Determine Aggregate/Asphalt Adhesion Properties and Potential Moisture Damage	Andrew Hanz Judie Ryan (POC)	October 31, 2006
2.		
3.		
4.		
5.		
6.		
5. Estimated cost, if any, for equipment, training, printing, etc.: \$54,810		
6. Expected benefits and how they will be measured (dollar savings, time savings, etc.): Cost and time saving in moisture damage testing by both the agency and contractors		
7. Reasons for terminating activities related to this research project:		

Project Closure

(Information provided by principal investigator and WisDOT project manager when final report is approved)

Date completed:

Timeline and budget

1. Was the project completed on time (i.e., per the original contract between WisDOT and the performing organization)?

- ☐ Yes
☒ No

1a. If not, what additional time was needed to complete the project?

What were the reasons?

- ☐ Data access ☐ Reporting/revision delay
☐ Testing delay ☐ Research subcontractor delay
☐ Construction delay ☐ Work plan modification
☐ Administrative delay

2. Was additional funding sought for this project?

- ☐ Yes
☒ No

2a. If yes, how much?

Was the funding approved? ☐ Yes ☒ No

For what purpose?

Partnerships and facilities

3. Did this research effort include partnerships with other universities, agencies, or other stakeholders?

- ☐ Yes
☒ No

3a. If yes, please list. Include the locations of any out-of-state institutions.

4. Indicate the location of facilities used:

- ☒ University
☒ Wisconsin DOT
☐ Other:

4a. Please describe the type of laboratory and testing facilities used.

UW Asphalt Lab
WisDOT Main Frame Databases

Student involvement

5. Were graduate students employed for this study?

- ☒ Yes
☐ No

5a. If yes, how many? 1

Number male

Number female 1

6. Did any of the graduate students use this research project in a published thesis or article?

- ☒ Yes ☐ Not sure
☐ No ☐ N/A

6a. Citations of published theses or articles:

1. Kantipong, K., Bahia, H. "Role of Adhesion and Thin Film Tackiness of Asphalt Binders in Moisture Damage of HMA." Journal of the Association of Asphalt Paving Technologists. Vol 72. Pages 502-528. Association of Asphalt Paving Technologists, White Bear Lake, MN
2003.<http://ntlsearch.bts.gov/tris/search.do?bl=1&f1=kw%3Abahia&r=1&d=tr&p=22&z=1&s=yr&o=1&new=n>
2. Kanitpong, K., Bahia, H. "Relating Adhesion and Cohesion of Asphalts to Effect of Moisture on Asphalt Mixtures' Laboratory Performance." Transportation Research Record. Journal of the Transportation Research Board. No. 1901. Pages 33-43. Transportation Research Board, Washington DC, 2005. <http://ntlsearch.bts.gov/tris/search.do?b1=1&f1=0&tl=kw%3Akanitpong&r=1&d=tr&p=2&z=1&s=yr&o=1>
3. Kantipong, K., Bahia, H. "Evaluation of Hot-Mix Asphalt Moisture Damage in Wisconsin as Related to Pavement Performance." Transportation Research Board Annual Meeting 2006 Paper #06-1605.<http://ntlsearch.bts.gov/tris/search.do?b1=1&f1=0&t1=aw%3Akunnawee+aw%3Akanitpong&r=1&d=tr&p=5&z=1&s=yr&o=1&new=n>

7. Were undergraduate students employed for this study? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7a. If yes, how many? Number male Number female
8. If known, please list the graduate students' current occupations or affiliations (e.g., continuing graduate education, employed at a public agency or private firm, etc.) and completed degrees and awarding institutions. Assistant Professor Asian Institute of Technology	9. If known, please list the undergraduate students' current occupations or affiliations (e.g., continuing graduate education, employed at a public agency or private firm, etc.) and, where applicable, completed graduate degrees and awarding institutions.